

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
28 November 2002 (28.11.2002)

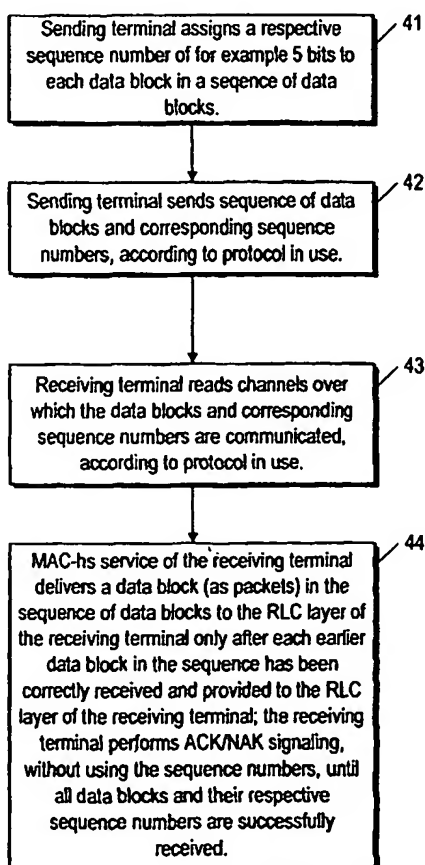
PCT

(10) International Publication Number  
**WO 02/096006 A3**

- (51) International Patent Classification<sup>7</sup>: **H04L 12/28**, 12/56
- (54) Agents: **MAGUIRE, Francis, J. et al.**; 755 Main Street, P.O. Box 224, Monroe, CT 06468 (US).
- (21) International Application Number: **PCT/IB02/01651**
- (22) International Filing Date: **14 May 2002 (14.05.2002)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:  
**60/292,023** **18 May 2001 (18.05.2001)** **US**
- (71) Applicant: **NOKIA CORPORATION [FI/FI]**; Keilalahdentie 4, FIN-02150 Espoo (FI).
- (71) Applicant (for LC only): **NOKIA INC. [US/US]**; 6000 Connection Drive, Irving, TX 75039 (US).
- (72) Inventor: **MALKAMAKI, Esa**; Riippakaivuntie 17 B, FIN-02130 Espoo (FI).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: **HYBRID AUTOMATIC REPEAT REQUEST (HARQ) SCHEME WITH IN-SEQUENCE DELIVERY OF PACKETS**



(57) Abstract: A method, along with corresponding devices (11, 12) and a system (11, 12), by which in-sequence delivery of data blocks, sent wirelessly by a sending terminal (11), is provided to a radio link control layer (12a) of a receiving terminal (12) by a media access control layer service (12b) of the receiving terminal (12), where the data blocks are communicated according to a protocol, such as WCDMA, in which a media access control layer (11b) of the sending terminal (11) includes as a service the transmission of the data blocks and possible retransmission of the same data blocks in response to ACK/NAK signaling by a corresponding service included in a media access control layer of the receiving terminal. No data block sequence number is used in the ACK/NAK signaling.

WO 02/096006 A3



**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**(88) Date of publication of the international search report:**

1 May 2003

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB02/01651

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04L 12/28, 12/56

US CL : 370/394

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/394, 392, 389, 349, 338, 469

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 6,317,430 B1 (KNISELY et al.) 13 November 2001, figure 1.	1-13
A,P	US 6,301,249 B1 (MANSFIELD et al.) 09 October 2001, figures 3-5.	1-13

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

29 August 2002 (29.08.2002)

Date of mailing of the international search report

09 DEC 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks

Box PCT

Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Bob A. Phunkulh

Telephone No. 703-305-4700